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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/643,912	08/23/2000	Kiyoshi Asami	001062	9494

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ARMSTRONG,WESTERMAN & HATTORI, LLP
1725 K STREET, NW.
SUITE 1000
WASHINGTON, DC 20006

EXAMINER	
NGUYEN, TU MINH	
ART UNIT	PAPER NUMBER
3748	12

DATE MAILED: 04/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

E

Office Action Summary

Application No.	Applicant(s)
09/643,912	Asami et al.
Examiner	**Art Unit**
Tu M. Nguyen	3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Apr 8, 2002*

2a) ☐ This action is **FINAL.** 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *2-4* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideratio

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *2-4* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) ☒ All b) ☐ Some* c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
18) ☐ Interview Summary (PTO-413) Paper No(s). _____
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other:

DETAILED ACTION

1. A Request for Continued Examination (RCE) and an Applicant's Amendment both filed on April 8, 2002 have been entered.

Claim 1 has been canceled. Claims 2-4 have been amended and are pending in this application.

Claim Objections

2. Claim 2 is objected to because on line 21 of the claim, --first-- should be inserted preceding "reference". Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (U.S. Patent 6,032,753) in view of Cullen et al. (U.S. Patent 5,414,994).

As illustrated in Figures 1 and 2, Yamazaki et al. disclose a catalyst warming control apparatus for a hybrid vehicle having an internal combustion engine (10), a generator (14) for generating electric power from the output from the internal combustion engine, a power storage unit (19) for storing electric power generated by the generator, and an electric motor (16) driven by the electric power stored in the power storage unit, the hybrid vehicle being driven by at least one of the outputs from the internal combustion engine and the motor, the catalyst warming control apparatus comprising:

- a determined value (Tpcat) relating to the temperature of a catalyst (43a) from a thermal model (step S306 or S130);

- a first comparison circuit for comparing the determined value (Tpcat) with a preset first reference value (Tk) (steps S308 and S310 in Figure 15);

- a control circuit for allowing the generator to generate electric power and to store the power in the power storage unit when the internal combustion engine is driven, and when the determined value is equal to or below the first reference value according to the output from the comparison circuit (in Figure 15, the expression $\Delta temp < 0$ in step S310 is the same as $(Tpcat - Tk) < 0$ which is equivalent to $Tpcat < Tk$. When the temperature of the catalyst (Tpcat) is below a catalyst activated temperature (Tk) (YES answer at step S310), the internal combustion engine

is driven; and the generator is allowed to generate electric power which is stored in the power storage unit (steps S312 and S314; lines 15-34 of column 13));

- a remaining charge detector, (78) in Figure 4, for detecting a remaining charge of the power storage unit; and

- a second comparison circuit for comparing the detected result from the remaining charge detector with a preset second reference value relating to the remaining charge (step S342 in Figure 20),

wherein the control circuit drives the vehicle by the output from the internal combustion engine, and allows the generator to generate electric power and to store the power in the power storage unit, when the determined value (Tpcat) is equal to or below a first reference value (Tk) according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is equal to or below the second reference value (NO answer at step S342) relating to the remaining charge according to the output from the second comparison circuit (step S344; lines 20-46 of column 14).

Yamazaki et al., however, fail to disclose that the determined value includes a temperature of the vehicle cooling water.

Cullen et al. teach an apparatus to limit a mid-bed temperature of a catalyst, which details the determination of a catalyst mid-bed temperature from a thermal model. This model, as shown in Figure 2, includes a temperature of the vehicle cooling water (see step 203). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have

utilized the thermal model taught by Cullen et al. in the apparatus of Yamazaki et al., since the use thereof would have provided an effective means to accurately determine the temperature of a catalyst.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. in view of Cullen et al. as applied to claim 2 above, and further in view of Kiuchi et al. (U.S. Patent 5,751,137).

The modified apparatus of Yamazaki et al. discloses the invention as cited above, however, fails to disclose that the control circuit allows the generator to generate electric power, and drives the vehicle by the motor and stores the electric power, when the determined value (Tpcat) is equal to or below the first reference value (Tk) according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is above the second reference value relating to the remaining charge according to the output from the second comparison circuit.

As shown in Figure 3, Kiuchi et al. teach a control system for electric power generating apparatus on a hybrid vehicle, in which the controller (17) allows the generator to generate electric power, and drives the vehicle by the motor and stores the electric power when it is time to purge hydrocarbon from a canister (steps 1-8 and 1-9) (purging is accomplished by running the engine to increase exhaust gas temperature (also see Figures 20 and 21)), and when the detected result from the remaining charge detector is above a second reference value relating to the remaining charge (step 1-3 with DOD < 50% (at least 50% charge)). It would have been obvious

to one having ordinary skill in the art at the time of the invention was made, to have utilized the control system taught by Kiuchi et al. in the modified apparatus of Yamazaki et al., since the use thereof would have provided the needed charge to operate other electrical devices in the vehicle.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. in view of Cullen et al. and Kiuchi et al.

As illustrated in Figures 1 and 2, Yamazaki et al. disclose a catalyst warming control apparatus for a hybrid vehicle having an internal combustion engine (10), a generator (14) for generating electric power from the output from the internal combustion engine, a power storage unit (19) for storing electric power generated by the generator, and an electric motor (16) driven by the electric power stored in the power storage unit, the hybrid vehicle being driven by at least one of the outputs from the internal combustion engine and the motor, the catalyst warming control apparatus comprising:

- a determined value (Tpcat) relating to the temperature of a catalyst (43a) from a thermal model (step S306 or S130);

- a first comparison circuit for comparing the determined value (Tpcat) with a preset first reference value (Tk) (steps S308 and S310 in Figure 15);

- a control circuit for allowing the generator to generate electric power and to store the power in the power storage unit when the internal combustion engine is driven, and when the determined value is equal to or below the first reference value according to the output from the comparison circuit (in Figure 15, the expression $\Delta temp < 0$ in step S310 is the same as (Tpcat -

Tk) < 0 which is equivalent to Tpcat < Tk. When the temperature of the catalyst (Tpcat) is below a catalyst activated temperature (Tk) (YES answer at step S310), the internal combustion engine is driven; and the generator is allowed to generate electric power which is stored in the power storage unit (steps S312 and S314; lines 15-34 of column 13));

- a remaining charge detector, (78) in Figure 4, for detecting a remaining charge of the power storage unit; and

- a second comparison circuit for comparing the detected result from the remaining charge detector with a preset second reference value relating to the remaining charge (step S342 in Figure 20).

Yamazaki et al., however, fail to disclose that the determined value includes a temperature of the vehicle cooling water; and that the control circuit allows the generator to generate electric power, and drives the vehicle by the generated electric power and stores the electric power, when the determined value (Tpcat) is equal to or below the first reference value (Tk) according to the output from the first comparison circuit, and when the detected result from the remaining charge detector is above the second reference value relating to the remaining charge according to the output from the second comparison circuit.

Cullen et al. teach an apparatus to limit a mid-bed temperature of a catalyst, which details the determination of a catalyst mid-bed temperature from a thermal model. This model, as shown in Figure 2, includes a temperature of the vehicle cooling water (see step 203). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have

utilized the thermal model taught by Cullen et al. in the apparatus of Yamazaki et al., since the use thereof would have provided an effective means to accurately determine the temperature of a catalyst.

As shown in Figure 3, Kiuchi et al. teach a control system for electric power generating apparatus on a hybrid vehicle, in which the controller (17) allows the generator to generate electric power, and drives the vehicle by the motor and stores the electric power when it is time to purge hydrocarbon from a canister (steps 1-8 and 1-9) (purging is accomplished by running the engine to increase exhaust gas temperature (also see Figures 20 and 21)), and when the detected result from the remaining charge detector is above a second reference value relating to the remaining charge (step 1-3 with DOD < 50% (at least 50% charge)). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the control system taught by Kiuchi et al. in the apparatus of Yamazaki et al., since the use thereof would have provided the needed charge to operate other electrical devices in the vehicle.

Communication

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 308-7763.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

April 24, 2002

Tu M. Nguyen

Patent Examiner

Art Unit 3748

THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700